HARE-LIP

by

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TO COVER THE SUBJECT of hare-lip fully it would be necessary to discuss first all the different varieties of the deformity and secondly the different methods of operating. This is obviously impossible in a lecture of this kind. In consequence, I must confine myself to one variety of hare-lip, the severest degree with a double cleft and a displaced premaxilla : and then describe solely my own methods of operating. Yet, since the type of deformity discussed unites in itself all the lesser degrees of the same condition, to describe it does, to a very fair degree, describe them all. And those who are likely to read this paper with real interest will be as familiar as I am with the various techniques I have discarded or modified.

THE ELEMENTS OF THE DEFORMITY OF COMPLETE DOUBLE HARE-LIP

1. *The failure of development of the columella.* The tip of the nose, instead of standing right out from the skin of the lip, as it should normally do, is almost on a level with it. The columella, or free anterior end of the nasal septum, is thus abnormally short. But it should be remembered that in babies the normal columella is very much shorter in proportion than in the adult, and the force that stretches it as the button nose of the baby turns into the prominent pointed adult one is also active in these hare-lips. If the tip of the nose is left free while the lip is pulled back into proper position, the forces thus set up will stretch the columella into quite a fair length. I think it is a grave mistake to try to lengthen it by putting into it skin that belongs to the lip.

2. *Failure of development of the labio-gingival sulcus.* In contrast to the first element of the deformity described, this important but not very obvious one has no tendency to correct itself. The central portion of the lip is stuck down upon the underlying bone of the premaxilla. If this is not freed there are several bad consequences :

(*a*) As the lip is fixed in the centre it is immobile and expressionless.

(*b*) It is extremely difficult to fit a dental plate in later life, and owing to the interference with dentition, most of these cases will need one.

(*c*) It prevents the proper joining of the ends of the muscle of the oral sphincter. In my technique this is of great importance.

If this sulcus is not constructed as a first stage in the operation it will need some most difficult skin grafting much later in life. However successful this may finally be, the muscles will never have developed well,

owing to their immobility during the most important time of growth. To construct it, advantage is taken of the way in which raw surface surrounded by mucous membrane will epithelialize quickly and without contraction.

3. *Displacement forwards of the premaxilla.* For some mysterious reason, when there is a cleft of the gum new bone begins to form in front of the vomer, between it and the premaxilla, so driving the latter forward. The vomer itself does not grow, and the division between it and what may be called the " pre-vomerine bone " is marked by a cartilage-filled suture line (Fig. 1).

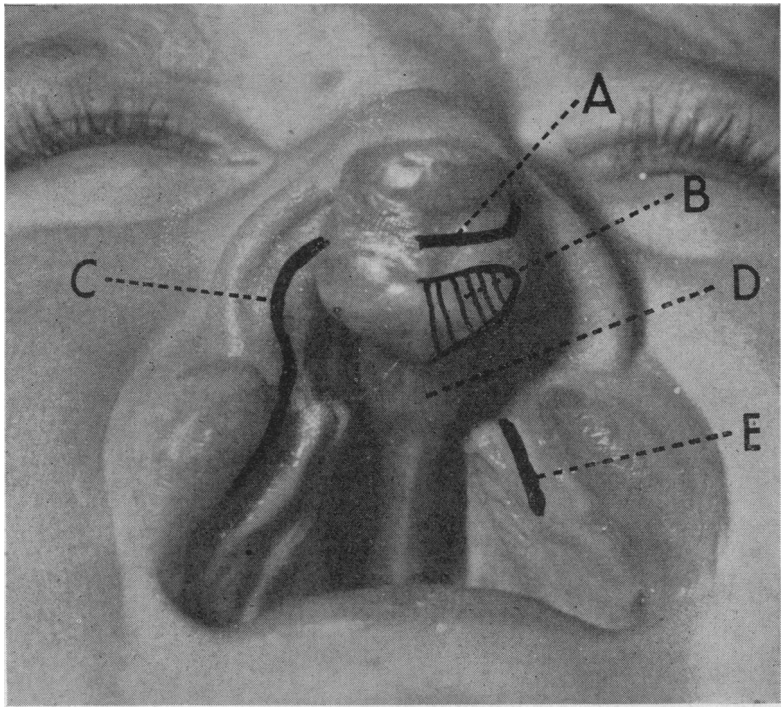

Fig. 1. View of complete double cleft lip from below. A—Line of incision to cut central portion of lip free from premaxilla. B—Area to be made raw in order to fuse with flap of muco-periosteum. C—Line of incision to free nostril. D—Bulge showing suture line between vomer and pre-vomerine bone. E—Line of incision to turn down flap of palatal muco-periosteum.

If the premaxilla is not placed in its normal position and firmly fixed there the consequences are :

(*a*) Great difficulty in joining the lip over it, so that it is usually advised to do only one side at a time.

(*b*) A very ugly profile, as the protrusion of the bone under the upper lip gives an animal-like snout.

(*c*) Great difficulty in fitting dentures, as in addition to being too far forward, the central portion of the gum is very wobbly.

It is sometimes said that if the lip is joined over the premaxilla it will come back into position. I have never seen this occur and I have seen many cases in which it has not occurred. There is no explanation of where the pre-vomerine bone would go to if the premaxilla did go back, and in any event there would still be the trouble of its mobility. Replacing the premaxilla has got a bad name because of the erroneous way in which it has been carried out in the past. To get a good result one must :

(i) Remove only the pre-vomerine bone that pushes it forward. If a wedge is taken out of the vomer, as was usually advised, the foundations of the nose are ruined and it goes flat on the face.

(ii) Cut the premaxilla free from the nose and the central part of the lip which adheres to this. If this is not done the tip of the nose is obviously dragged back.

(iii) Get actual junction between it and the alveolar ridge ; on both sides for preference, but on one at least. Sometimes the gap is so wide that it is impossible to get the displaced portion to touch both sides at once, and the result is then like a complete single hare-lip. If this junction is not gained, the bone will often atrophy in a surprising manner, so that one would imagine it had been excised. When properly replaced the premaxilla often grows a pair of surprisingly good central incisors ; but this cannot be depended upon.

4. *The cleft of the floor of the nostril.* There are two elements in the displacement that occurs here. The first is the obvious lateral shifting that produces the wide gap. But in addition to this there is a displacement caudally or downwards of the outer end of the ala of the nose that must be corrected at the same time. There are three main points to be observed :

(*a*) The natural tendency in closing a gap of this kind is to sew any point on one side to the point on the other side directly opposite. It is this that produces the typical drooping of the nostril on the outer side of a mended hare-lip. A far better nostril will be formed by sewing a short piece of skin that appears to belong to the lip just to the outer side of the nostril to a corresponding raw edge lying inside the nostril on the nasal septum.

(*b*) In freeing the nostril and cheek from the underlying bone it is a mistake to cut inside the nose in such a way that the whole

outer side of the nostril is brought in. If this is done the thick posterior part of the nostril will swing in and obstruct the airway. The incision on the inner side of the nostril should run quite close to the skin edge, leaving the posterior part of the ala in its original place adherent to the maxilla.

(*c*) The gap in the bone needs a force to pull it together, and this can be supplied by the contraction in healing of the raw undersurface of the floor of the nostril that is left by a simple joining of the surface. If a mucous lining for the deep surface is constructed at the same time this force is much weakened.

5. *The cleft of the lip.* In joining the lip I make two assumptions. The first is that the best way to join the lip will be to imitate the manner of junction that should normally have occurred. The second is that as muscles are involved in the cleft, and their correct post-operative action is necessary for a good result, these muscles should be treated according to the orthopædic principles established in managing similar muscular gaps elsewhere. To imitate the normal function of the lip involves first finding out what it is: the two straight vertical lines of the anatomy books have obviously no connection either with the moulding of the normal lip, or with the curious shape of its elements found when these fail to fuse. I think the key to it is to be found in the central papilla which is so plainly noticeable on the lip of a baby, though on an adult it has usually disappeared. On turning up the lip this papilla will be seen to be the tip of a shield-shaped area outlined by a groove on the mucosa, suggesting that the enclosed space is all that remains of the undersurface of the central portion. If this is correct it means that the central portion has no part in the formation of the mucocutaneous line.

The philtrum, that vertical groove down the centre of the lip, is outlined by two ridges. I assume these to be caused by the over-riding of the thick lateral portions over the thinner central one. This over-riding naturally goes farthest where the two parts first meet, at the upper part of the line of junction, and in consequence the space between them, that is to say, the groove of the philtrum, is there narrower than below. Now it is obviously impossible to imitate this process exactly, but three main principles emerge from consideration of it:

(*a*) No skin of the lateral portions meets below the central portion.

(*b*) The central portion forms no part of the red margin.

(*c*) The muscles meet and join under the skin of the central portion.

The correct surgical formula should observe all these principles. It is worth while considering here what are the properties of the ideal human lip to which the one surgically formed should have as much resemblance as possible. According to present conventions of beauty it should be:

(*a*) Short from above downwards.

(*b*) Thick antero-posteriorly.

(*c*) The red margin should be loose, rounded, and slightly everted.

(*d*) There should be a well-marked double curve or cupid's bow in the line of the mucocutaneous junction.

(*e*) The lip should be mobile in speech or expression.

It is hardly necessary to point out that the formulæ given in many textbooks for joining the lip do not observe the principles laid down, and cannot possibly produce a lip of the kind desired.

THE TECHNIQUE OF OPERATION

Preliminary operation. The object of this is to get the premaxilla firmly fixed in its correct position and to construct a proper labio-gingival sulcus.

Time of operation. It should be performed about three months of age, and an interval of about a month should be allowed between it and the joining of the lip.

Anæsthetic. This should be intra-tracheal gas and oxygen. The child should be bandaged to a light wooden crucifix, which by preventing movements will enable the degree of anæsthesia to be kept extremely light. This is important as there is a considerable unavoidable loss of blood, and with deep anæsthesia shock may be dangerous.

Instruments. No special ones are needed beyond the little spiked plate, to keep back the premaxilla, and a chisel-knife. The surgeon's ordinary technique of sewing with a needle-holder should carry him through this operation as well as that for a cleft palate.

Steps of operation.

1. Cut the soft tissues of the lip away from the premaxilla. This should be done very thoroughly, the division being carried right back to the nasal septum. Two arteries on the lifted flap need catching with artery forceps, which serve to pull it away from the subsequent manœuvres as well as to stop the bleeding.

2. Make a longitudinal cut over the pre-vomerine bone, and remove it sub-mucously with narrow biting forceps. This should allow the premaxilla to be forced straight backwards into the normal line of the gums. It is preferable to leave it a little too far forward rather than to force it too far back.

3. With an awl carry a stitch of very strong silk-worm gut or nylon through the alveolar ridge on either side of the gap. Bring this through the holes in the spiked bar, force this bar into the narrow upper part of the raw surface of the premaxilla, and tie it so that this is fixed firmly in position. A further loop of the suture is made round the bar and through the septum of the nose ; and when this is tied the bar cannot drop downwards.

4. Cut the mucosa off the posterior and lateral sides of the premaxilla with a small sharp knife. This is to give a raw surface to which the flaps cut in the next step can adhere.

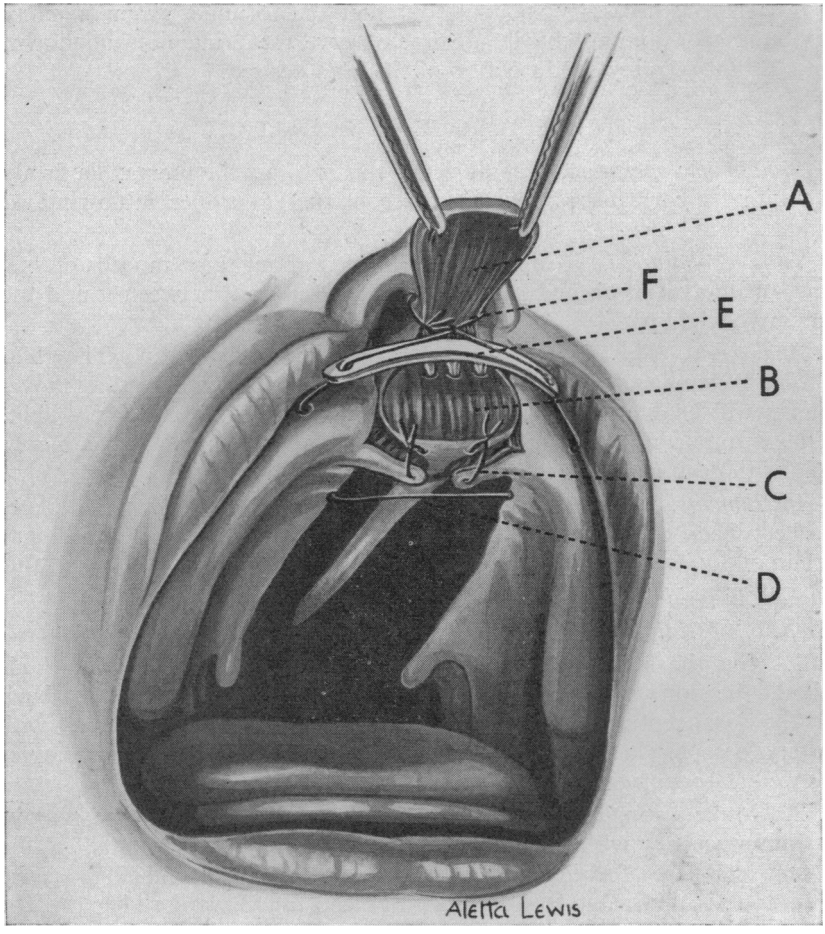

Fig. 2. Completion of the operation for replacement of the premaxilla and construction of the labio-gingival groove. A—Raw undersurface of central portion of lip, cut free from premaxilla. B—Raw surface corresponding to A. C—Flap of muco-periosteum turned down off anterior angle of hard palate, and sewn to a patch made raw on the posterior aspect of the premaxilla. D—The stitch fixing the retaining bar through the alveoli. E—Retaining bar, with its spikes driven into the bone of the premaxilla. F—The loop of the suture tying the bar to the nasal septum.

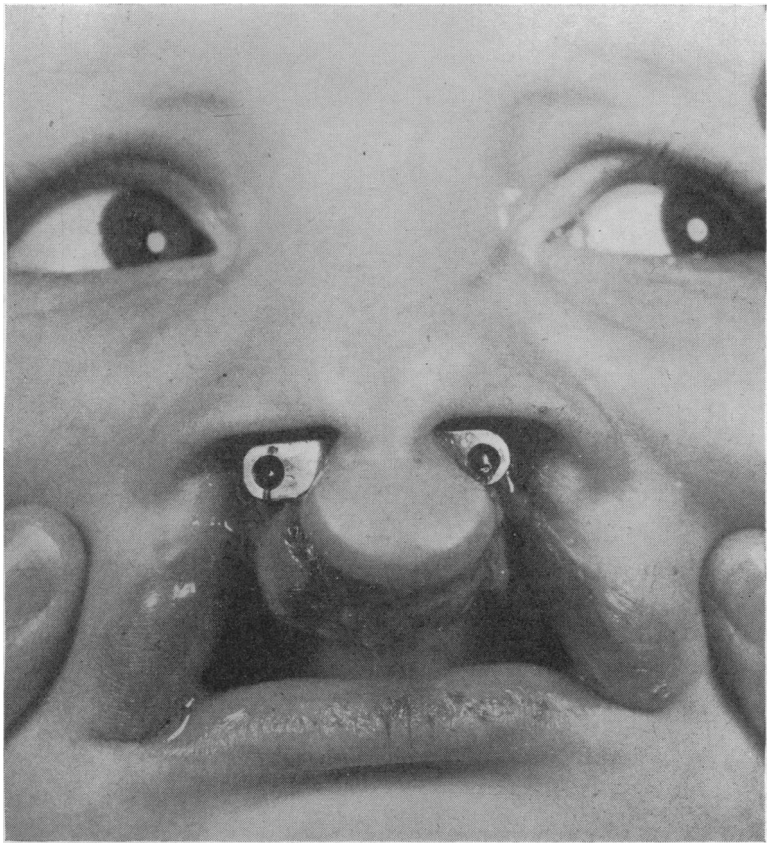

Fig. 3. The central portion of the lip has been cut free from the premaxilla. It is held away from it by the stainless steel plate that keeps the premaxilla back in position while it fuses with the edges of the alveolar cleft.

5. Raise the anterior ends of the muco-periosteum of the hard palate as flaps, lever them backwards and inwards so that they come against the raw surfaces on the premaxilla, and stitch them there with fine linen sutures.

6. Leave the plate in position for a fortnight if possible, though it may become too loose to be effective after 10 days.

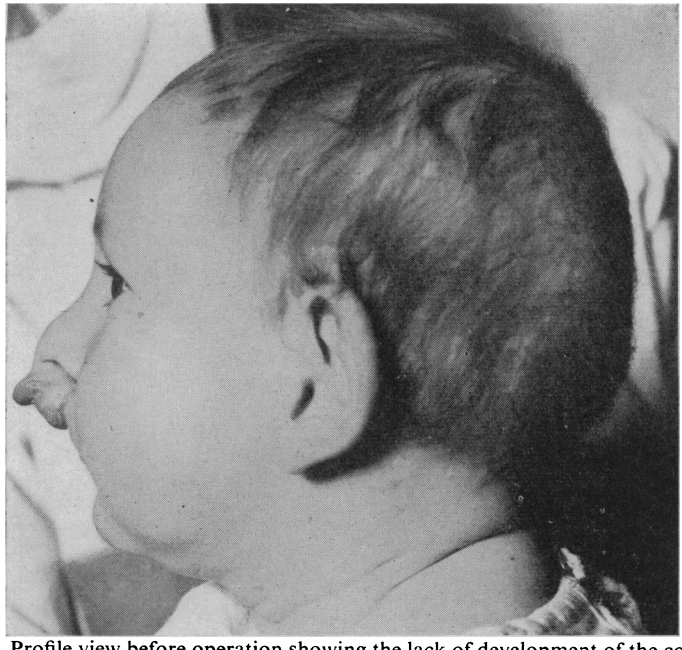

Fig. 4. Profile view before operation showing the lack of development of the columella and the labio-gingival groove.

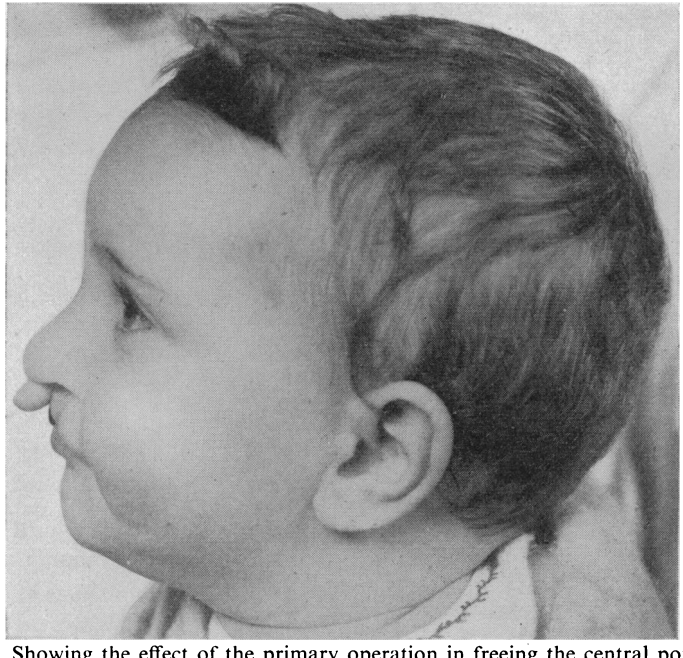

Fig. 5. Showing the effect of the primary operation in freeing the central portion of the lip and getting the premaxilla into normal position without pulling back the tip of the nose.

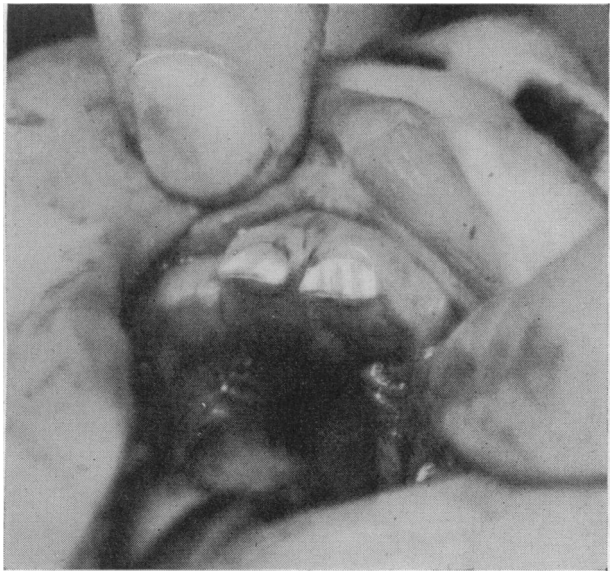

Fig. 6. Showing a replaced premaxilla firmly fixed in the correct position and growing two apparently normal teeth at the correct angle.

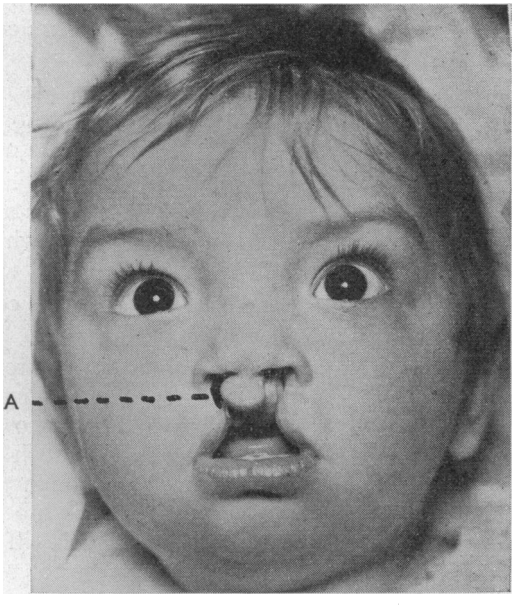

Fig. 7. Showing the premaxilla back in position. Note the narrowness of the gaps on either side after this, with consequent lack of tension after joining. A—Line of incision to make raw surface to sew to septum just inside nostril.

The result should be as shown in Figs. 4, 5, 6 and 7, with the premaxilla firmly in position and its upper surface, which was made raw, covered all over with oral mucosa. One disadvantage of this technique is the possible damage done to the tooth germs by the suture which is brought through the alveolar ridge. How dangerous this is I do not know, but in any event the upper teeth in these cases are going to be defective.

SECOND OPERATION

The final stage in correcting the deformity is to join the floor of the nostril and the lip itself. Its stages are :

1. Put in tight temporary sutures of linen to control the coronary arteries on either side. These should be passed just inside the angles of the mouth, to catch the artery which can be felt running just under the mucosa. They are far more effective and less hindrance to the operator than the various forceps designed for the purpose, and can save a good deal of the bleeding in what is unavoidably a rather bloody operation.

2. Free the whole cheek and ala of the nostril from the underlying bone. This can be done very rapidly with dissecting scissors and the arterial bleeding so caused controlled by an assistant pressing on the cheek for a few minutes while the surgeon continues with the next step. In freeing the nostril the cut should be taken close to the edge of the ala, as has been already advised.

3. Cut down the mucocutaneous junction on the lip for about a quarter of an inch below the nostril. This gives a raw surface there which is to be sewn to the septum.

4. Make a raw edge on the septum by cutting backwards from the opening of the nostril and removing all the mucosa below this. This edge should run along the normal line of the floor of the nose.

5. Bring the two raw edges so made together by a linen mattress suture. This form of suture is used because there is no need to avoid scarring on this surface, and this is one of the points at which tension is unavoidable.

6. Put in some very fine adjusting sutures to bring the edges together microscopically.

7. Cut the central portion of the lip into a V, and remove all the mucosa from its undersurface. I find this is the step in the operation which arouses most opposition ; especially to those who have had to do with war wounds it seems madness to sacrifice so much tissue and so much surface. But it should be realised that though most plastic surgery is concerned with conditions in which there is too little surface, there are other conditions in which there is too much. If this ruthless cutting is not done, the geometry of the junction will not work out, and it will be impossible to join the muscles properly.

The cutting is done in the way that saddlers from time immemorial have cut the very similar substance of leather, by forcing a sharp blade

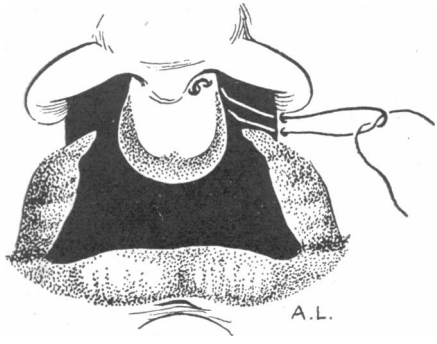

Fig. 8. Showing the stitching of the floor of the nostril. A linen mattress suture joins the skin just outside the nostril on the outer side to the mucosa on the septum just within it.

through it on to a piece of soft wood held underneath it. The blade is shaped like a chisel and should be razor sharp. In this way one gets a perfectly straight cut at right-angles to the surface, and avoids the difficulty of holding and cutting the extensible and slippery lip tissues, which alter shape as a cut proceeds.

8. Cut the lateral portions of the lip for suturing. For this it is necessary to keep all the red margin, but to allow this to be adjusted round the lower angle of the central V in such a way as to produce the "cupid's bow" double curve that has been mentioned. This is done by pushing a 2 mm. ophthalmic trephine through the lip at the level of the tip of the central V, placing the circle with care so that the mucocutaneous line forms a tangent to it. The trephine hole is then connected to the raw surface sewn to the septum by a cut with the chisel-knife. This produces a kind of hook of red margin, which is then trimmed by cutting off the small strip of skin left upon it by fine scissors, as well as any tags of mucosa. These two hooks of red margin are then pulled downwards by a stitch which is passed through them, to give the effect shown in Fig. 10. Experiment with leather or other similar substance will show that, when it is desired to change suddenly the direction of a cut, the smallest segment of a circle at the point of change enables this to be much more easily done, and the whole raw surface to be flattened out, than if two cuts were allowed to meet at a simple angle.

9. The suturing turns upon one unexpected stitch, which continues the lifting-up process begun by the formation of the floor of the nostril. This stitch enters the lateral portion opposite the trephine hole: but instead of being taken across in the obvious way to the corresponding

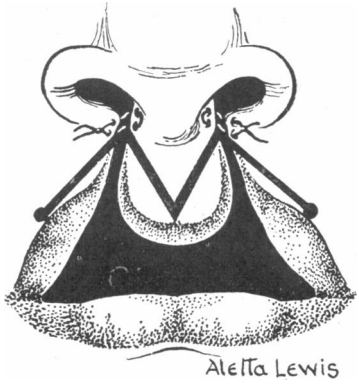

Fig. 9

Fig. 10

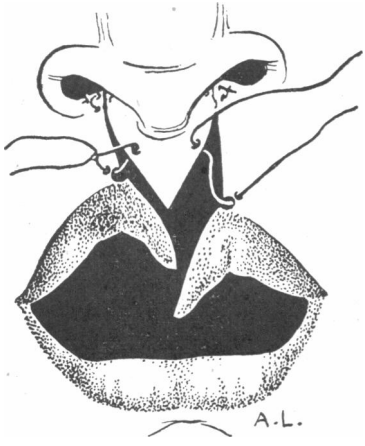

Fig. 11

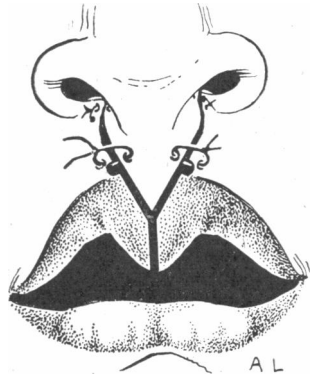

Fig. 12

Fig. 9. Showing the cutting of the lip. The trephine holes are made level with the tip of the V into which the central portion has been cut, and are connected to the raw surfaces stitched to the septum by cuts with the chisel-knife. The strips of skin attached to the hooks of mucosa thus formed are trimmed off with fine scissors.

Fig. 10. The appearance when the hooks are held down by a temporary stitch and the first stitch is inserted. Note how it slopes acutely downward from the centre of the side of the central portion to the trephine hole on the mucocutaneous border.

Fig. 11. The first crucially important stitch is tied. Note how this bends the muco-cutaneous line in such a way as to form one half of a cupid's bow.

Fig. 12. The eventual shape of the lip defined by the two primary sutures. All that is now needed on the anterior surface of the lip is fine adjusting sutures.

trephine hole, which lies invitingly opposite, it is passed through the middle of the side of the central V. One of the most dramatic moments I know in surgery is when the insertion of this stitch and its fellow on the opposite side suddenly pulls the whole rather alarming collection of raw surfaces together and produces from them a very reasonable looking lip. Once these two stitches are in place it is only necessary to put in fine adjusting sutures to complete the sewing of the external surface of the lip.

10. The joining of the muscles is done by deep vertical mattress sutures of 000 chromic cat-gut, inserted so as to bring together the whole thickness of the lateral portions with the exception of the already sutured skin. The first of these is put in opposite the trephine holes, and two others usually are enough to join the entire undersurface of the lip. The effect of these sutures is treble : to join the muscles, to join the mucosa, and to make the lip pout so that the red margin is everted in the way that has been laid down as desirable. There is no need to dissect the muscles free and suture them as a separate layer. One knows exactly where they are, and the less they are injured the better.

11. A tension-bridge, or modified Logan's bow, is then placed in position and tightened up to its fullest extent. The original Logan's bow was a static device that simply prevented the sides of the wound falling apart, and often failed to do this owing to the inevitable slipping and stretching of the sticking-plaster that held it. The tension-bridge, on the other hand, has a dynamic action in actually forcing the raw surfaces together as a carpenter clamps together two glued surfaces of wood. Its effects are :

(*a*) To avoid the breaking down of the wound. Several thousand successive cases have been done without this occurring.

(*b*) To avoid stitch scarring, as may be seen from the photographs, even though the stitches are left in longer than usual. It is tension upon a stitch that makes it mark, rather than the time it is left in.

(*c*) To observe the orthopædic principle of allowing newly joined muscles to heal in the position of contraction. If the lip is to have the power of voluntarily pouting after operation, as it should have, it must be held in the position of pouting, that is contraction of the oral sphincter, during healing.

12. Penicillin and sulphonamide powder is then blown on to the wound. This mixes with the slight exudate present at this stage to form an antiseptic scab, which should stay dry and hard throughout healing. No other dressing is used.

13. The stitches are removed at six or seven days. This should be done by the surgeon himself as it is far from easy owing to the resistance of the baby. Clumsy removal may open the wound.

14. The tension-bridge is left in position for another week, and then removed.

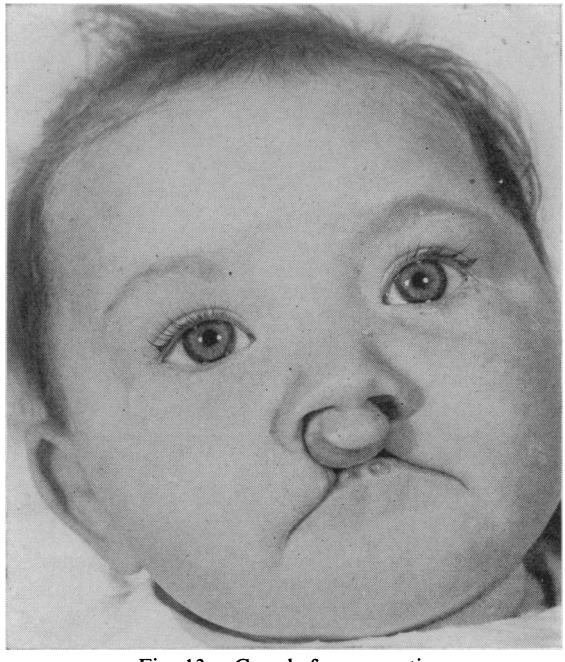

Fig. 13. Case before operation.

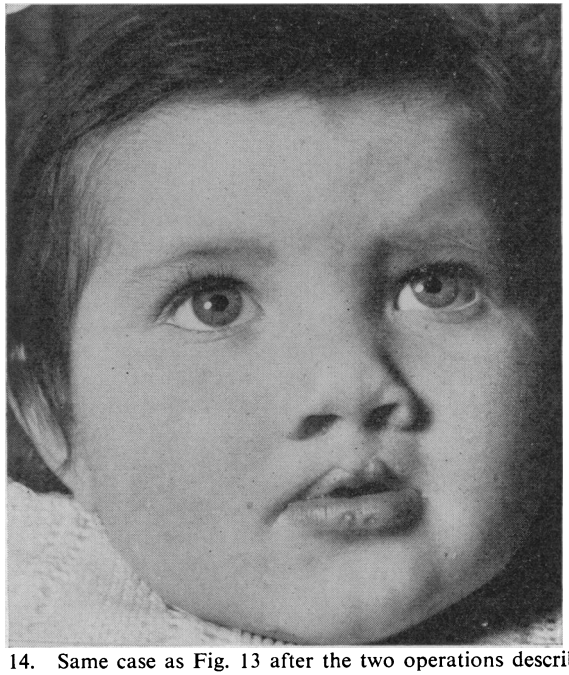

Fig. 14. Same case as Fig. 13 after the two operations described.

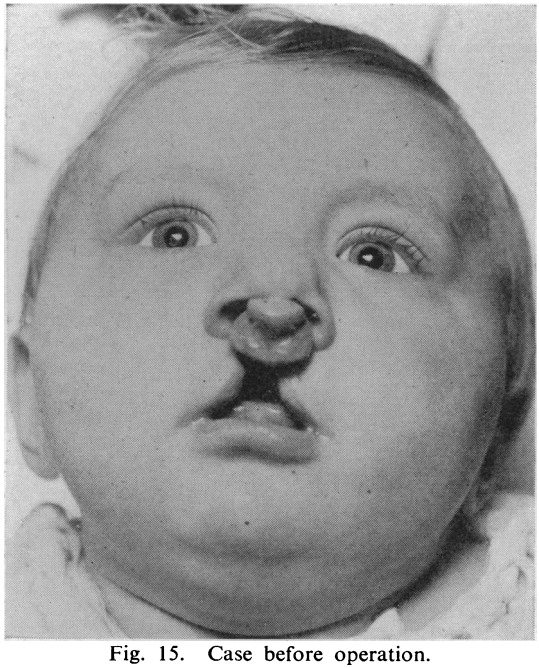

Fig. 15. Case before operation.

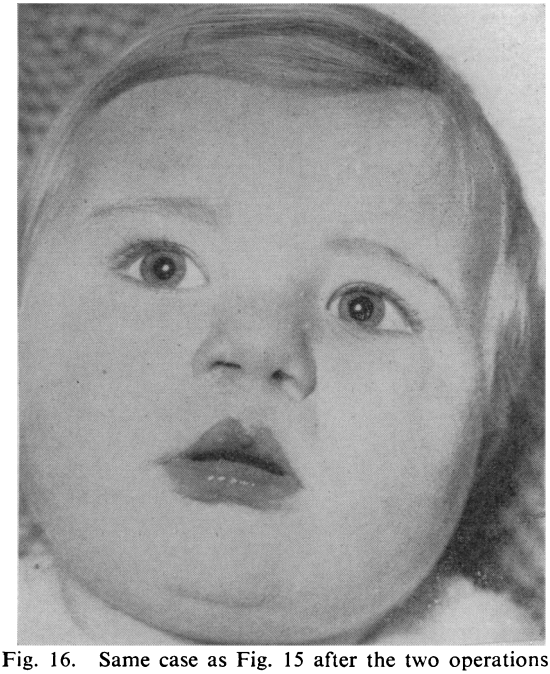

Fig. 16. Same case as Fig. 15 after the two operations.

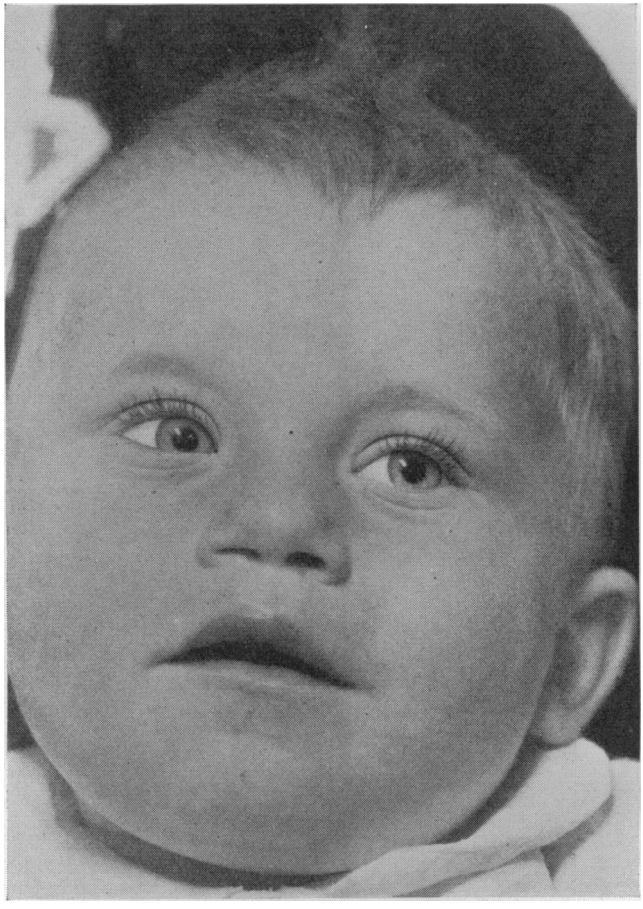

Fig. 17. Case of displaced premaxilla with double hare-lip after two operations.

RESULTS

These are shown by the photographs. It must have struck anyone who has studied the literature of the subject how extremely difficult it is to find a photograph of a result from a complete double hare-lip which really shows what one wishes to know. I would suggest laying down certain rules for such photographs :

(*a*) The scale of the reproduction must be at least a third of the normal, preferably larger. A photograph the size of a postage stamp is very little use.

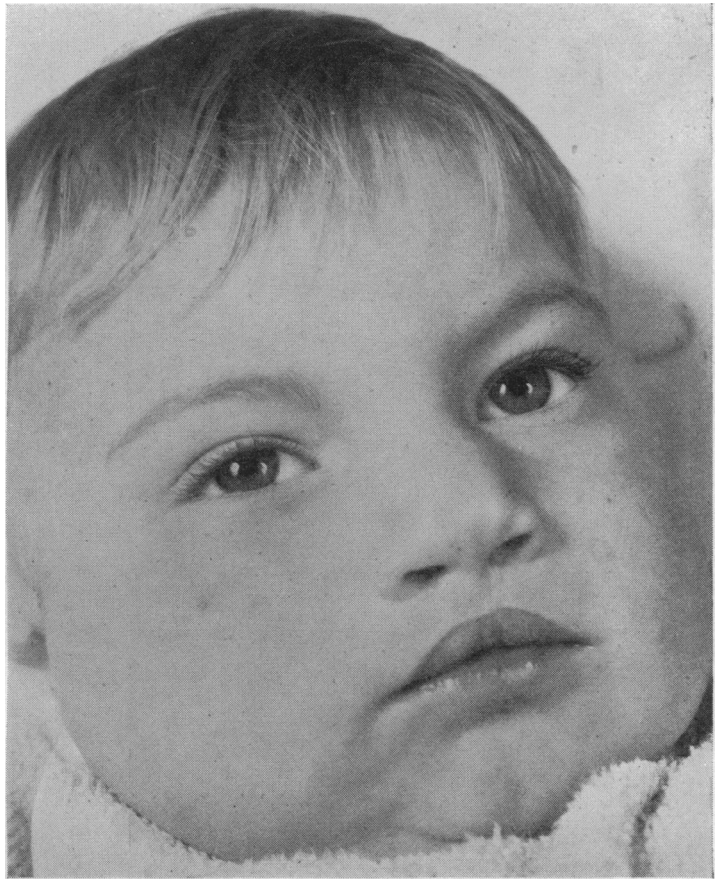

Fig. 18. Case of displaced premaxilla with double hare-lip after two operations.

(*b*) The focusing must be as hard and definite as possible; the separate hairs of the eyelashes should be distinct. The slight haziness of outline suitable for a social portrait is out of place here. This means that the scars will show: if they do not, the picture is of very little interest to a surgeon. I believe it is only possible to get this definiteness in babies by a flashlight technique.

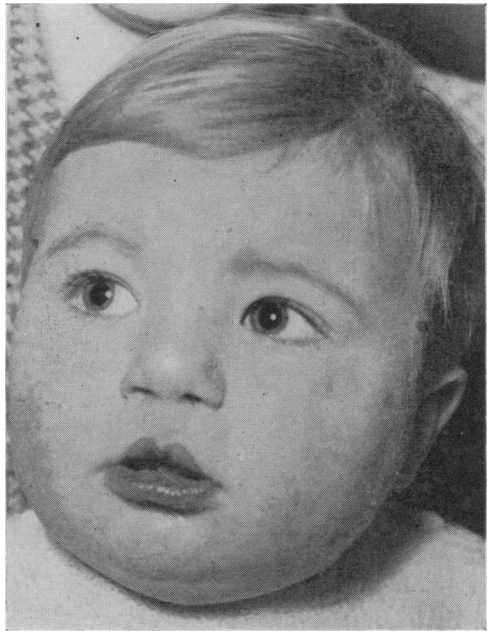

Fig. 19. Case of displaced premaxilla with double hare-lip after two operations.

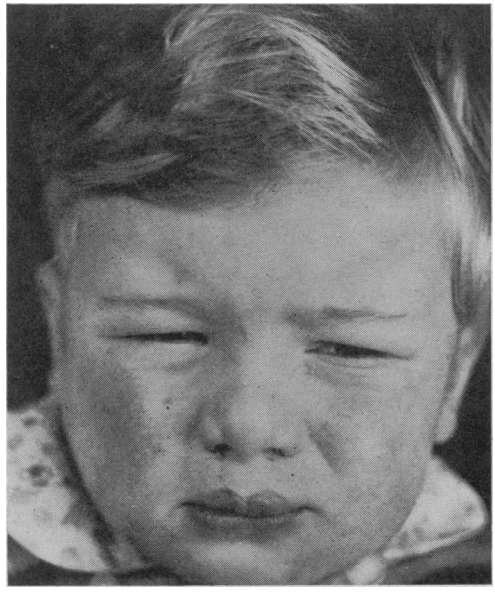

Fig. 20. Case of displaced premaxilla with double hare-lip after two operations.

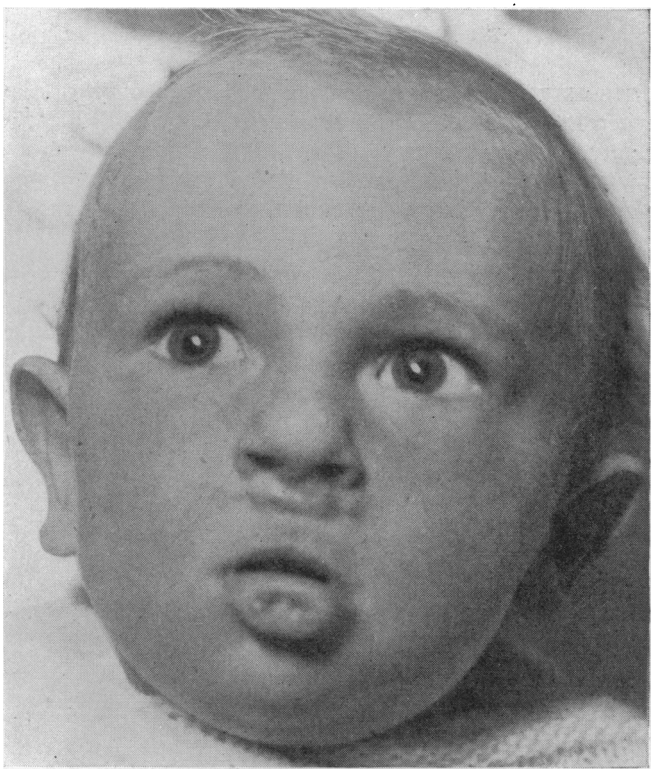

Fig. 21. Case operated upon after a formula still to be found in many textbooks.

(*c*) The patient should not be smiling, as this stretches the lip and flatters the result by doing away with irregularities.

(*d*) No make-up should be used on the patient and no retouching done to the pictures. A study of illustrations in textbooks of plastic surgery will show that this rule is far from unnecessary.

I should like to thank Mr. Derek Martin, Assistant Curator, The Hospital for Sick Children, for his patience and technical skill in taking the photographs illustrating this article.